

Dear Sir/Madam,

Ref: Statement of Research Interest for a PhD position in Cyber-Physical Systems/ Internet of Things

I am writing to express my interest in a Ph.D. position in Cyber-Physical Systems (CPS) / Internet of Things (IoT), particularly with a focus on their Safety and Security (S&S). I am passionate about it.

My passion for CPS originated from my Master's studies. I was part of a research team guided by Prof. Shuang-Hua Yang at the Shenzhen Key Laboratory of S&S for Next Generation of Industrial Internet. This team has received multiple grants from the National Natural Science Foundation of China in industrial CPS (iCPSs). There, I studied the contradictions identification of iCPSs S&S from the perspectives of system and risk theories, publishing a 26-page long paper in IEEE-LoTJ. This work was recognized by the RAMS and TTE labs in Huawei's Munich Research Center and applied to Huawei's intelligent connected vehicles. Invited by Prof. Shiyan Hu, I reviewed approaches on iCPSs S&S, summarized potential research directions, and published a paper in IET-CPS. I also collaborated with partners on data-driven intrusion detection and model-driven S&S assessment, one of which was published in INFOCOM'24, and another is under review in IEEE Trans. Syst., Man, Cybern. These experiences have given me a comprehensive understanding of iCPSs and helped me establish my **Future Goal**: to become an influential scholar and provide a set of precaution, detection, and response methodologies for iCPSs S&S from design time to runtime. Specifically, during system design, we need methods for S&S requirements/measures modeling and automated verification, including our partially completed S&S contradictions resolution. During system operation, anomalies and intrusions are detected, dynamic risk assessment is conducted based on a unified S&S degree, and finally, intrusion tolerance and safe control strategies are determined and executed according to the assessed risk level. My self-motivated nature and ability to conduct independent research equip me well for a PhD position in this field. Additionally, I have many interesting ideas and have written several **Research Proposals**. If you are interested, feel free to ask me for it.

In addition to research capabilities, I also accumulated a lot of experience in communication engineering, embedded development, and robot control. I have interned at Huawei, ZTE, and Standard Robot. I served as the captain of a robot team and won 3 national, 6 provincial, and 10 university-level competition awards and honors. These experiences have endowed me with excellent teamwork and engineering capabilities, and instilled in me the confidence to tackle future research challenges.

I hope I make my motivation for applying a Ph.D. in CPS/IoT clear. I have a broad interest in these fields. My background matches such a PhD position well, and I am committed to exploring research questions, filling research gaps, and becoming an influential scholar. I look forward to collaborating with an advisor whose interests align with mine. If you are interested, please feel free to contact me. Thank you for your consideration.

Sincerely,

Mr. Zhicong SUN

E-mail: zhicongsun\_cs@163.com

Website: [www.zhicongsun.github.io](http://www.zhicongsun.github.io)